

CLAIMS:

1. A device for temporarily creating and maintaining a depositing cavity in a container to be filled with objects, in particular flexible packages, standing substantially upright on the floor of said container, said device including:

a moveable planar first restraining member with an anterior surface facing into said cavity and a posterior surface; and

a moveable planar second restraining member with an anterior surface facing into said cavity and a posterior surface;

the restraining members being operationally arranged to be removably insertable into and between facing side walls of a container to be filled with upright stacked objects and thereby to define a temporary cavity which facilitates the insertion of the objects into the container,

wherein said cavity is defined, in an object receiving configuration, by facing anterior surfaces of said first and second restraining members, by facing side walls of said container and by a portion of the floor of said container delimited thereby, such that upon deposition a given object sits upon said portion of said floor and between said facing anterior surfaces, and wherein the posterior surface of said first restraining member acts to restrain previously deposited objects against movement;

and wherein, following deposition of an object into said cavity, said first restraining member may be withdrawn from its position on one side of said object, and reinserted so as to take up a new restraining position on the opposite side of said object, and said second restraining member may then be moved away from said first restraining member thereby to create a new cavity for the deposition of a further object.

2. The device of claim 1, wherein the first and second restraining members are at least partly defined by a comb-like structure, consisting of successive teeth and gaps;

and wherein said first and second restraining members are disposed relative to one another such that the teeth of the first restraining member are aligned in a plane with the gaps between the teeth of the second restraining member, thereby to allow, following deposition of a package into said cavity and withdrawal of said first restraining member from its position on one side of said object, said first restraining member to be inserted through said second restraining member in an interleaving manner so as to take up a new restraining position on the opposite side of said object.

3. The device of claim 1 or 2, wherein at least one of said first and second restraining members is formed from sheet material.

4. The device of claim 3, wherein both first and second restraining members are formed from sheet material.

5. The device of claim 2, wherein said teeth are formed from rod material.

6. The device of any preceding claim, wherein the surfaces of said first restraining member are treated to reduce their coefficient of friction.

7. The device of any preceding claim, wherein the first restraining member is mounted on a moveable articulated arm, and is pivotally connected to said arm such that the centre of gravity of the first restraining member is substantially directly beneath the centre-line of said pivot.

8. The device of any preceding claim, wherein in said object receiving configuration, said first restraining member is actively biased such that its posterior surface acts to place said previously deposited objects under compression, sufficient to prevent relative movement amongst said objects.

9. The device of claim 8, wherein said compression may be released immediately prior to withdrawal of said first restraining member from said case.

10. The device of any preceding claim, wherein in said object receiving configuration, said first and second restraining members are disposed within said container such that said portion of said container floor represents substantially the final position of said object in said container, thereby obviating any requirement for the deposited object to be subsequently repositioned.

11. The device of any preceding claim, wherein in said object receiving configuration, said first and second restraining members are disposed within said container such that said cavity tends to taper inward toward said floor of said container.

12. The device of claim 11, wherein in said object receiving configuration, at least one of said first and second restraining members is arranged to allow pivoting movement of its lower extremity away from the other of said first and second restraining members, and wherein a bias against said pivoting movement is provided, such that a braking force may be exerted on an object falling into said cavity, while allowing said cavity to expand to accommodate said object.

13. The device of claim 12, wherein both first and second restraining members are arranged to allow pivoting movement of their lower extremities away from each other, and wherein a bias against said pivoting movement is provided to both members.

14. The device of any of claims 12 or 13, wherein said bias is provided by a spring-loading mechanism.

15. The device of any of claims 2 to 14, wherein during said insertion of said first restraining member through said second restraining member, a cradle is formed between said anterior surfaces of said first and second restraining members that is capable of catching and holding one of said objects.

16. The device of any preceding claim, wherein said objects fall into said cavity via the force of gravity alone.

17. The device of any preceding claim, wherein said objects are relatively stiff, and wherein the posterior surface of said first restraining member only contacts an upper portion of said previously deposited objects to restrain them against movement.

18. The device of any preceding claim, wherein said container is a commercial packaging receptacle for consumer goods.

19. The device of claim 18, wherein said objects are packages constructed from flexible film and which contain powder, solid articles or liquids.

20. The device of claim 18 or 19 wherein said objects are not readily capable of standing substantially upright on a flat surface.

21. A method of depositing objects into a container, including the steps of:

positioning an open container in a filling position relative to a device according to any of claims 1 to 17;

inserting said first and second restraining members into said container in said object receiving configuration, thereby creating a deposition cavity disposed to receive said object;

causing an object to drop into said cavity;

withdrawing said first restraining member from said container;

reinserting said first restraining member into said container such that it takes up a new restraining position on the opposite side of said object such that it restrains both the most recently deposited object and all previously deposited objects from movement;

moving said second restraining member away from said first restraining member thereby to create a new cavity for the deposition of a further object;

repeating the above cycle until said container is filled;

withdrawing said first and second restraining members from said container;

removing filled container from said filling position; and

repeating the above sequence.

22. The method of claim 21, wherein said container is a commercial package for consumer goods.

23. The method of claim 22, wherein said objects are packages constructed from flexible film and which contain powder, solid articles or liquids.

24. The method of claim 22 or 23 wherein said objects are not readily capable of standing substantially upright on a flat surface.

25. A packaging line for filling containers with objects, including a device as defined in any of claims 1 to 17.

26. The packaging line of claim 25, wherein said containers are commercial packaging receptacles for consumer goods.

27. The packaging line of claim 26, wherein said objects are packages constructed from flexible film and which contain powder, solid articles or liquids.

28. The packaging line of claim 26 or 27 wherein said objects are not readily capable of standing substantially upright on a flat surface.